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## IMMIGRANTS' EMPLOYMENT IN SPANISH COOPERATIVES: OUTCOMES IN RELATION TO THE BUSINESS CYCLE

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<b>Corresponding Author:</b>	Mercè Sala, Ph. D Universitat de Lleida Lleida, Lleida SPAIN
<b>Corresponding Author Secondary Information:</b>	
<b>Corresponding Author's Institution:</b>	Universitat de Lleida
<b>Corresponding Author's Secondary Institution:</b>	
<b>First Author:</b>	Mercè Sala, Ph. D
<b>First Author Secondary Information:</b>	
<b>Order of Authors:</b>	Mercè Sala, Ph. D
	Teresa Torres, Ph. D
	Mariona Farré, Ph. D
<b>Order of Authors Secondary Information:</b>	
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# **IMMIGRANTS' EMPLOYMENT IN SPANISH COOPERATIVES: OUTCOMES IN RELATION TO THE BUSINESS CYCLE**

Mercè Sala Rios (corresponding author)

e-mail: [mercesa@econap.udl.cat](mailto:mercesa@econap.udl.cat)

Mariona Farré Perdiguer

Teresa Torres Solé

Affiliation: Department of Applied Economics, University of Lleida. Spain

Address: Universitat de Lleida, Departament d'Economia Aplicada.

Carrer de Jaume II, 73. Campus Cappont.

25001 Lleida

# IMMIGRANTS' EMPLOYMENT IN SPANISH COOPERATIVES: OUTCOMES IN RELATION TO THE BUSINESS CYCLE

## Abstract

In this paper, we analyse the interaction between immigrants' employment in cooperatives and the business cycle. The study is centred on the Spanish economy during the period 2003-2015. The main goal of this paper is to answer the following two key questions: are fluctuations in immigrants' employment in cooperatives cyclical in relation to the business cycle? And, are immigrant employees more vulnerable to the business cycle than native employees? The cycles and their turning points are identified using the Bry and Boschan (1971) algorithm. To resolve it we employ the BUSY software, developed by the European Commission. The procedure allows us to identify the features of the cycle phases and to calculate the synchronization index. The results show that (1) employment in cooperatives is procyclical and with no differences between immigrant and native workers, (2) the economic crisis has hit immigrant workers harder than native ones, (3) the immigrants' birthplace is significant because some cyclical behaviour can be found to vary according to the immigrants' origins, however in general, sensitivity to the business cycle is the common factor.

**Key words:** Cooperatives, immigrants, employment cycle, business cycle, synchronization

**JEL:** E240, E320, J540, J610, L210

## 1. Introduction

This paper provides evidence on the interaction between the business cycle and the employment cycle of immigrant workers in Social Economy firms. Also, we analyse if there are differences between the employment cycle of immigrants and that of natives. This study is an interesting addition to the literature on the topic since it deals with an important subject that, so far, has not received enough attention.

The globalization of the economy, the complexity of society and the deep crisis that started in the second half of the last decade are putting into question the development model of the rich countries. In some cases the reforms introduced have consisted in the privatization of services, which has contributed to generating social and economic inequalities. In this new stage, people are responding in different ways, one of them is to set up more participatory structures, and whose main goal is not

to make profits but to carry out activities that pursue the general interest, whether economic, social or both. The term Social Economy is used to refer to this kind of organization.

In Spain the Social Economy Law<sup>a</sup> contributed to enhancing the recognition and development of the social economy. This norm sets up the principles that should lead the behaviour of social economy companies. Such principles are the following:

1. The primacy of persons and the social goal over capital. This implies independent, transparent, democratic, and participatory management. Social economy institutions have to prioritize decision making based more on people and their contributions to the work and services offered by the institution or the social objective than on their capital equity contributions.
2. The profits of economic activity have to be distributed mainly for the benefit of the entity members or partners, depending on the work and service provided or the activity carried out in regard to the institution's social purpose.
3. Internal and social solidarity should be promoted. Entities have to promote commitment to local development, equal opportunities for men and women, social cohesion, the integration of persons at the risk of social exclusion, the generation of stable and quality employment, a work-life balance, and sustainability.
4. Independence from the public authorities.

At this moment the Spanish institutions of the social economy consist of cooperatives, labour societies, mutual societies, insertion companies, fishermen's guilds, and sheltered employment centres. The Spanish Social Economy Employers' Confederation (CEPES) remarks that "in short, a Social Economy enterprise is a clear example of how rationality and social progress are compatible,

of how business efficiency can coexist with social responsibility. Of how another way of doing business is possible”<sup>b</sup>.

The discussion about whether the Social Economy is able to offer a substantially different system of organization from that of traditional capitalist economy companies has been growing. There is a consensus that the Social Economy has a positive effect on economic and social regional development in several ways. First, as Social Economy projects take into account both social and profit goals, they generate stable employment and professional management (Gagné and Deci, 2005; Melián and Campos, 2010 and Pencavel et al., 2006). Second, the local dimension of Social Economy companies increases their commitment regarding the region where they are located. Monzón and Chaves (2012) recognize that the Social Economy, besides helping to create new jobs and to maintain a presence in sectors or industries in crisis or threatened with closure, has been a way to favour the hiring of disadvantaged groups and the socially excluded. Calderón and Calderón (2012a,b) recognize that these features, along with factors such as gender equality and the flexibility to adjust the working day rather than the number of employees, give greater quality to the employment within the Social Economy<sup>c</sup>.

Another positive contribution is pointed out by Borzaga et al., (2014), who indicate that the Social Economy implies a new model of the relationship between work and motivation because it promotes the sharing of ideals and values between the enterprise and colleagues and a good working environment. Albors and Tarazona (2005) add that the motivation of employees increases due to their participation in the company's management. Furthermore, strong motivation leads to an increase in the level of commitment of the workers and helps to improve their will to innovate (Valentinov, 2007)<sup>d</sup>. Thanks to all these characteristics, Social Economy companies have shown their ability to

identify emerging needs and to successfully develop new products and services (Borzaga et al., 2014 and Monzón, 2012).

The literature that provides arguments to explain why the crisis increased the number of Social Economy companies resurfaced again with the emergence of the crisis. Such arguments can be summarized as follows. First, the creation of companies within the Social Economy is more countercyclical than the creation of capitalist companies. More of them are created when unemployment rises and growth is slower (Pérotin, 2006). Second, some capitalist companies have become Social Economy companies in order to preserve employment. Third, growth in unemployment rates leads to unemployed people withstanding structural unemployment by setting up their own companies (Grávalos and Pomares, 2001). Finally, in times of crises, several studies, such as Borzaga et al. (2014); Lampel et al. (2014); Monzón (1991) and Roelant et al. (2012) indicate that Social Economy companies are able to resolve social problems that public or private companies cannot and, in addition, they demonstrate greater resilience than other forms of enterprise.

The above paragraphs show the arguments used in the literature to identify the positive effects of the Social Economy. In fact, similar relevance can be found if we review the literature concerning the employment of immigrants. The literature is widely interested in analysing the implications to the labour market of immigration flows. There is a broad consensus in recognizing that the labour market shows several differences within the framework of native and immigrant workers. In the field related to our study, some papers such as Aydemir (2003), Carrasco and García-Pérez (2015), Lacuesta and Puente (2010), Mandelman and Zlate (2010), and Orrenius and Zavodny (2009, 2010a,b) examine how immigrants fare relative to native workers over the business cycle; that is, the authors provide evidence on the different effects that the fluctuations in the economic activity produce on the employment of immigrants and natives. Others focus on showing how crises, especially the crisis

initiated in mid-2007, impact on the labour market, distinguishing between the labour market performance of native and immigrant workers (see, e.g., Garrido et al., 2010). Regarding the Spanish economy, Carrasco and García-Pérez (2015) find that in Spain, immigrants are more sensitive to changes in economic conditions and Garrido et al. (2010) recognize that immigrants have figured prominently in Spain's economic growth for decades, but the current recession has hit them harder than natives.

At this point, we want to analyse if the results obtained from the literature with respect to the employment of immigrants and their relationship with the business cycle remain true when the analysis deals with immigrants who work in Spanish Social Economy firms. The study is centred on the period 2003-2015 and is concerned exclusively with cooperative firms<sup>e</sup>. To understand why only cooperatives and also why the analysis that we propose is important, it is necessary to have a clear idea of the relative importance of both immigration and cooperatives in the Spanish economy during the study period.

As regards immigration, since mid-1990s the arrival of immigrants to Spain has been gradually increasing, the year 2000 being the date that marked the beginning of the mass migratory movement. The percentage of immigrant people, taking account the birthplace, reaches between 10% and 13% of the Spanish population and also of total employment. As regards cooperatives, we focus on them because they have a long tradition in the Spanish economy and are the leading features of its Social Economy. On average, cooperatives amount to around 47% of the number of companies and institutions in the Social Economy and about 31% of its employment. The share of immigrants' employment in cooperatives over the total cooperatives' employment is somewhere between 8% and 10%<sup>f</sup>.



Cooperatives can be classified as a form of self-employment which might be influenced by the business cycle. There is a pull and push in relation to self-employment (Svaleryd, 2015). When the economy grows business opportunities arise encouraging the setting up of new firms. In the downturns self-employment may be a way to avoid unemployment and, furthermore, existing cooperatives are more likely than conventional firms to adjust earnings instead of employment (Craig and Pencavel, 1992)<sup>g</sup>. If we focus on Spanish cooperatives, Grávalos and Pomares (2001) study the employment of cooperatives in the years 1986-1995. They find that during episodes of economic crisis, employment in cooperatives demonstrates a “refuge effect” that even leads to counter-cyclical behaviour. Díaz and Marcuello (2010) focus on the period 1995-2008 and conclude that in relation to changes in GDP, employment created by cooperatives changes less than total employment, although they do not find the “refuge effect” defended by the above authors. Díaz-Foncea and Marcuello (2015) observe that the main determinant of the creation of cooperatives is the level of unemployment and remark that the creation dynamic works against the growth tendency of the economic activity; specifically, cooperatives show a countercyclical character<sup>h</sup>. Román (2010) and Sala et al. (2014, 2015) affirm that cooperatives show greater capacity to create employment in an expanding economy and lower propensity to shed employment in periods of economic contraction than the Spanish economy as a whole. However Sala et al. (2014, 2015) indicate that the crisis of 2007 has implied a closer association to the business cycle.

As far as we are aware, there is a gap in the study of the relationship between the cycle of immigrant employment in cooperatives and the business cycle. We seek to contribute to improving the knowledge and to increasing the debate in this field of inquiry. The main goal of this paper is to answer the following two key questions: are fluctuations in immigrants’ employment in cooperatives

cyclical in relation to the business cycle? And, are immigrant employees more vulnerable to the business cycle than native employees?

The paper is organized as follows. Section 2 describes the database, explains our selection of variables and the methodology followed in the analysis. Section 3 presents the results. In Section 4 we ask if the birthplace of the immigrants matters in our study. We conclude in Section 5 with a brief summary of the main results and a reflection on future lines of research.

## **2. Data and methodology**

The recurrent fluctuations in time of economic activity are known as the business cycle. We identify two phases in the business cycle, expansion and contraction. During expansions the economy is growing, and during recessions it is contracting. In this context we define the cycle of immigrant (native) employment in cooperatives as the fluctuation in immigrants' (natives') employment in cooperatives over a period of time in phases of expansion and contraction.

To study these cycles, the data set used in this paper covers 12 years with a quarterly frequency. We analyse the interactions between the fluctuations in cooperatives' immigrant employment, cooperatives' employment of native workers and the Spanish business cycle during the period 2003-3Q/2015-2Q. The sources of the data are Social Economy Statistics (Ministry of Employment and Social Security) for the cooperatives and Spanish National Statistics Institute (INE) for the business cycle. The term cooperative employment used in the study refers to "employment performed both in and within the scope of cooperatives, namely comprising both employees and worker-members working in cooperatives, and self-employed producer-members producing within the scope of cooperatives (in terms of processing, commercialization and/or inputs), as well as the employees of these self-employed producer members" (Roelants et al., 2014, p. 17). To perform our analysis we distinguish between the number of immigrant employees (IE) and the number of native employees

(NE). The business cycle indicator is GDP in real terms (deflated by the GDP deflator). All variables we use are at the quarterly frequency, seasonally adjusted and in logs-levels.

Based on the pioneering paper of Burns and Mitchell (1946), fluctuations in the business cycle can be identified following different approaches. Our study is based on the “growth cycle” which defines the cycle as fluctuations of periods of fast growth followed by periods of slow growth. Concretely, we use the “growth cycle” named the “deviation cycle” by the fact that the analysis is based on the fluctuations of the series levels with respect to the trend (Lucas, 1977)<sup>i</sup>. So, the cyclical component is calculated as the deviation of the original series with respect to the trend and it determines the cyclical fluctuations and their turning points, peaks (P) and troughs (T)<sup>j</sup>. The cyclical component increases in the expansion phase, trough to peak, and decreases in the contraction phase, peak to trough.

We compute the cyclical components of the variables, using the Hodrick-Prescott filter (HP). This filter despite its desirable properties – it removes unit root trend components, has no phase shift and, for an appropriate choice of its smoothing parameter, closely approximates the optimal filter that isolates only components with business cycle frequencies – does not avoid the distortions that are caused by rapidly changing weights at the ends of the sample. Thus, as a robustness test to the choice of HP filter, the cyclical components using the Baxter-King filter are also computed and we found no significant differences in the results of the two filters.

There are different techniques to identify turning points; our study is based on one of the most widely used, namely the Bry and Boschan (1971) algorithm, adapted to quarterly data by Harding and Pagan (2002). The software employed is known as BUSY and was developed by the European Commission (Fiorentini and Planas, 2003). The procedure entails certain censoring rules. Firstly, a local maximum/minimum is defined as the highest/lowest point between the two preceding and following

quarters to its position. That is,  $y_t$  is a peak at time  $t$  if  $y_t$  is the maximum ( $y_{t-2}, \dots, y_{t+2}$ ) and it is a trough if  $y_t$  is the minimum ( $y_{t-2}, \dots, y_{t+2}$ ). Secondly, only completed cycles may be used, as a result of which a peak must be followed by a trough and vice versa. Finally, the minimum cycle length is 5 quarters. As Harding and Pagan (2002) stated, the minimum duration of 15 months established by Bry and Boschan (1971) is on a par with 4 or 5 quarters, depending on the month in which a turning point occurs and the relative figures of the months in a quarter. For this reason, the turning points are calculated using 4 or 5 quarters. The turning points identified are the same, so the results are presented based on 5 quarterly intervals.

Having identified the turning points and defined the expansion and contraction phases, we will present the features of the cycle in terms of duration, amplitude, delay and synchronization. The duration ( $D$ ) of a contraction (expansion) is the number of quarters that elapse between a peak and the next trough (trough and peak). The duration of the cycle is the number of quarters that elapse between peak and peak (trough and trough). The amplitude of a contraction (expansion) is calculated as the percentage change between the cyclical component value in the trough (peak) and the value in the previous peak (trough). The amplitude estimates the gains in terms of production (employment) in expansion phases and the losses in the contraction phases. The delay is the number of quarters that a series lags (leads) in reaching the turning point with respect to a reference series, in our study the reference series is GDP. Throughout the paper, we focus on the average of the duration, amplitude and delay.

The presence or absence of differences and asymmetries in the features of the phases affect the synchronization of cycles. Synchronization is defined as the amount of time two series ( $i, j$ ) are in the same phase. The analysis of cycle synchronization is performed in two ways. Firstly, as expounded

by Harding and Pagan (2002) we use the concordance index (I), which for two cycles (i,j) is defined as:

$$I_{ijt} = T^{-1} \left[ \sum_{t=1}^T (S_{it} S_{jt}) + \sum_{t=1}^T (1 - S_{it})(1 - S_{jt}) \right]$$

Where  $S_{it}$  ( $S_{jt}$ ) is a binary variable that takes the value one when i (j) is in expansion and zero when it is in contraction and T is the number of observations. The index varies between one and zero. One denotes perfect concordance and zero perfect absence of concordance.

The concordance index provides information on synchronization in the period as a whole. In order to make available a disaggregated analysis of synchronization, we calculate an asymmetry index (AI) that quantifies the trend of synchronization over time (Larsson et al., 2009 who cite Hassler, 2003). The asymmetry index between two variables (i,j) in the period t is defined as:

$$AI_{ijt} = |Y_{it}^* - Y_{jt}^*|$$

Where  $Y^*$  is the cyclical component of the series standardized using the standard deviation ( $\sigma$ ):

$$Y^* = Y / \sigma,$$

In the period t lower levels of AI imply higher levels of synchronization, zero being the minimum value, which implies that both variables are fully synchronized.

### 3. Results

By applying the turning-point algorithm, we obtain a set of peaks and troughs for the variables analysed. The results are presented in Table 1 and plotted in Figures 1 to 3. All variables present two complete trough-to-trough cycles. The turning points reflect GDP growth at the beginning of the

millennium and its translation to the employment of cooperatives. Also, the crisis of mid-2007 is recognized.

Table 2 presents the main features related to the duration and amplitude. The average duration of the GDP expansive phases is longer than the duration of the IE and NE, 9 quarters in front of 8.5 and 8.33, respectively. Instead, in the contraction phases, the average duration of the IE and NE is greater than that of the GDP (9, 8.5 and 8). However, the most noteworthy feature is that the differences among the durations of the cycles are not significant. With respect to the amplitude, on the one hand, GDP shows the greatest in the expansion which means that the capacity of the cooperatives to generate employment is lower than the capacity of the economy to generate activity. On the other hand, if we distinguish between natives and immigrants, Table 2 shows that the capacity to generate employment is higher in the case of immigrants than in the case of natives (238.20 versus 210.35). In contraction, the cooperatives have higher resilience to losing employment than the economy to losing activity and no significant differences can be found between natives and immigrants. This indicates that employment of natives and immigrants is affected equally in contraction phases. The lags and leads are minimums among series, and we cannot identify significant differences between natives and immigrants (Table 3), the IE lags roughly 0.6 quarters with respect to GDP, and NE leads roughly 0.6 quarters.

The last feature of the cycles we will analyse is the synchronization. The previous outcomes make us think that the series co-movements are very similar so that we can expect a high level of synchronization. The first indicator is the concordance index (I) that for the whole of the period achieves the values of Table 4. The index is 0.89 for both natives and immigrants, which means that for almost 90% of the time analysed, employment in cooperatives and the business cycle are in the

same cyclical phase. Overall, the fluctuations in employment in cooperatives follow the evolution of the business cycle, with no differences between immigrants and natives.

The asymmetry index (AI) is calculated to analyse the evolution of the synchronization. Figure 4 plots the AI and the adjusted linear trend, and below we can find the linear trend estimated equation. There are no significant differences between native and immigrant indexes, both present a slight negative slope, this suggests that, at the end of the period, cooperative employment behaviour tends to follow that of the business cycle. Figure 4 also shows that since the end of 2006, the slope for immigrant employment is somewhat steeper, which might indicate that the crisis of mid-2007 affected immigrants more than natives.

We wonder to what extent the crisis has increased the procyclical behaviour of cooperative employment and whether it indicates that the behaviour of natives and immigrants has moved away. We separate the asymmetry index into two periods, pre and post-crisis. The pre-crisis period lasts until 2008-1Q because in this quarter the GDP reached the peak previous to the downturn (Table 1). Figure 5 shows the pre-crisis period, in which the employment of natives and immigrants present an opposite behaviour. While native employment follows the business cycle, immigrant employment diverges from it. Immigrants' employment outcomes illustrated more independence with respect to the business cycle than natives' employment. This evolution changes in the period post-crisis, as we can see in Figure 6, the slopes are negative, which means that immigrants and natives show a procyclical evolution. Employment in cooperatives resisted the first strike of the crisis, however, its intensity hindered the capacity of these firms to resist the downturn and to maintain their employment. Furthermore, since mid-2008, the linear trend of immigrant employment increases in steepness with respect to that of natives, indicating that the effect of the crisis was greater in their case. These results are consistent with those of Sala et al. (2014, 2015) relating to the employment of

cooperatives and with Garrido et al. (2010) relating to Spanish immigrant workers. Sala et al. (2014, 2015) indicate that the crisis led an association between the employment cycle of cooperatives and the business cycle. The crisis intensity and its systemic character removed the higher resilience of cooperative employment. Meanwhile, Garrido et al. (2010) indicate that the crisis affected immigrants more than natives. They suggest that natives found protection against unemployment through seniority in the job that immigrants did not find. The authors also acknowledge that the crisis came when the Spanish labour market was showing some saturation in the entrance of immigrants.

#### **4. Does the immigrants' birthplace matter?**

So far, we have not taken account of the immigrants' origins. The purpose of this section is to determine whether the birthplace of the immigrants matters in the context of our inquiry. We divide the immigrants into six categories based on their birthplace, as follows: Europe, Africa, Central America, North America, South America and Asia<sup>k</sup>. The same methodology as applied in the aggregate analysis carried out in the previous section will be followed. All tables and figures are gathered in the appendix.

Tables A.1 to A.4 of the appendix allow us to conclude that the origin of the immigrants does matter. Comparing these data with respect to those of the immigrants set (Tables 1 to 4), it is possible to affirm that there are divergences in the features of their cycles. The immigrants originating from Africa and South America reach figures closer to the aggregate data than the rest and also achieve the greatest concordance index with GDP and NE. These results mean that, as we found in the aggregate data, the capacity of cooperatives to generate employment for immigrants originating from Africa and South America, and the weakness to lose it, is procyclical in relation to the business cycle and moves in a similar direction to the natives' employment.



European and Asian immigrant employment present differences in the duration and lags of their cyclical phases with respect to the business cycle, and consequently their concordance index – slightly higher than 50% – is lower than that of the aggregate data (around 90%, Table 4). The amplitude of employment for European immigrants is highest in expansion and lowest in contraction. So, the creation of European immigrants' employment in cooperatives and its resilience are stronger than that of both the total immigrant set and also that of the natives. In the case of the employment of immigrants from North America and Central America we find the highest divergences. Their sensitivity to the business cycle is weak, as can be deduced from the duration and lags in Tables A.2 and A.3 of the appendix.

According to the analysis, a first key result can be established, that the immigrants show different cyclical behaviour with respect to GDP depending on their origin. Next, using the asymmetry index, we assess the evolution of their relationship. Table A.5 of the appendix illustrates the linear trend estimated equations of the asymmetry index (AI) depending on the origin of the immigrants (whole period and pre and post-crisis periods)<sup>1</sup>. The temporal evolution reveals commonalities and differences with the aggregate data. Beginning with the similarities, in the pre-crisis period, the opposite behaviour among immigrants and natives is repeated. Native employment follows the business cycle and immigrant employment diverges from it. In the post-crisis period, the employment of immigrants from Europe, Africa, South America and Asia follow a similar evolution to that of the immigrant set, that is, the employment of the cooperatives was able to resist the first shock of the economic downturn, however, its intensity made it lose its refuge capacity impacting harder on immigrants.

Regarding the divergences, the most remarkable is the cyclical evolution of immigrant workers from North America. This is the only origin where asymmetry has a positive slope, meaning that the cycle

of the immigrants' employment from North America decoupled from the business cycle during the post-crisis period. The cycle of the immigrant workers from North America was not influenced by the downturn of the business cycle. With regard to Central America, the estimated equation indicates that compared to the natives, the asymmetry index moves quite parallel, but always below. This implies a greater sensitivity of immigrants from Central America to the business cycle than that of the natives.

These outcomes allow us to point out that there are differences between immigrant groups because divergences in their relationship with business cycles and with native employment cycles have been found. So, answering the key question: the immigrants' birthplace does matter, even though the common nexus is a high level of cyclicity.

## **5. Conclusions**

Our paper contributes to the literature that seeks to characterize labour market cycles. The study provides evidence of the relationship between the Spanish business cycle and the cycle of immigrants' employment in cooperatives using data over the period 2003-2015. The paper identifies the cycle turning points and its most important features. The main goals are to know if the fluctuations in the immigrants' employment in cooperatives are procyclical in relation to the business cycle and if these fluctuations make immigrants' employment more vulnerable to the business cycle than that of natives.

The turning points analysis allows us to observe that there are no significant differences between the business cycle and natives' and immigrants' employment cycles regarding the duration and lags of their cyclical phases. The results concerning the amplitude suggest that in the expansion phases, the economic activity growth is relatively greater than the capacity of the cooperatives to generate

employment. Even though, the capacity to provide employment to immigrants tends to be greater than that of natives, but the differences are not very significant. In contraction phases, the cooperatives have higher resilience to losing employment than the economy has to losing activity and again, no significant differences between natives and immigrants can be found. The synchronization analysis shows that the cooperatives' employment is procyclical. Summarizing, the fluctuations of employment in cooperatives follow the evolution of the business cycle, with no remarkable differences between immigrants and natives.

However, the assessment of the synchronization evolution allows us to find some divergences throughout time. First, until the arrival of the crisis, immigrant employment seemed to be less linked with the business cycle than native employment. Second, the results confirm that employment in cooperatives resisted the first strike of the crisis but its intensity and duration hit the cooperatives' resistance, especially from mid-2008. Furthermore, we also find that the effect of the crisis has been more intense in the case of immigrants than in the case of natives.

The previous analysis has also been performed taking into account the origin of the immigrants. Regarding the results, we can affirm that there are differences among the features of the employment cycles depending on the birthplace of the immigrants. The main outcomes can be summarized as follows. First, the immigrants whose birthplace is Africa and South America reach the greatest concordance with the business cycle and with natives' employment. The capacity of cooperatives to generate employment for immigrants from Africa and South America, and the weakness to losing it, are linked to the business cycle and it moves in a similar direction to native employment. Second, immigrants from Europe show the most (least) intense capacity to gain (lose) employment in expansion (contraction) with respect to the other immigrant groups and even with respect to natives. Third, immigrants from North America and Central America are the most disconnected from the

economic dynamic as can be deduced by their phase durations, their lags and their synchronization index. Finally, the crisis affected all groups of immigrants, except North Americans. In general, since mid-2008, the fluctuations become more procyclical and the refuge effect vanished. In contrast, the employment fluctuations in North American follow the same direction as in the pre-crisis period. Among the main reasons behind this greater resilience are the level of education and English proficiency. Studies such as those by Medina et al. (2010) and Miguélez et al. (2014) find that in the 2007 crisis both factors acted as protectors of immigrants' employment. Although we do not have disaggregated figures for cooperatives, the INE's National Immigrant Survey 2007 shows that 61.73% of immigrant employees from North America have tertiary education as opposed to 20.37% of other immigrant employees. In conclusion, different cyclical behaviour with respect to Spanish economic activity and with respect to natives' employment in cooperatives can be found depending on the immigrants' origin, however it is worth noting that in general, sensitivity to the business cycle is the common factor.

These key findings provide some insights in terms of policy implications. Policy makers should focus more on promoting and stimulating these different systems of organization from the traditional capitalist economy companies. Positive economic effects are brought by cooperatives; as we set out in the introduction, there is a large body of literature about the helpful role of cooperatives in terms of creating jobs, resilience or economic development. Right now, on the basis of our results, these advantages have an added value. A high contemporary synchronization between the business cycle and the cycle of immigrants' employment in cooperatives has been found, so it may be expected that economic improvements lead to improvements in the immigrants' employment in cooperatives. Cooperatives are useful to maintain the level of employment among specific groups who are very vulnerable to unemployment, as are immigrant people.

We would like to emphasize that this study has the major constraint of insufficient data which, at the same time, provides options to where we may direct our future lines of inquiry. Statistics on immigrants' employment in cooperatives are available from 2003. Thus, the data which we have worked with are insufficient to make any robust statistical estimation. There is no consensus among analysts about what must be the minimum acceptable length of time series. However, they are unanimous in recognizing that below a certain value, between 50 and 60 observations, the results cannot be considered appropriate because the coefficients obtained are not statistically significant (Box and Jenkins, 1970). So, in the future, when the series are long enough, we may explore more thoroughly the nature of the relationship between immigrants employed in cooperatives and economic activity.

In this sense, the literature has noticed that immigrant employment is more sensitive to the business cycle than that of natives and a number of factors have been identified. For instance, among others, immigrants are more likely to work in cyclical sectors and in occupations that lose jobs easily during downturns; but on the other hand, they present greater mobility which can counteract the above. Also, immigrants tend to have lower education levels and to be low-skilled workers (see e.g. Carrasco and García-Pérez, 2015, Garrido et al., 2010 or Orrenius and Zavodny 2009, 2010a, b). If our results do not show significant differences in the association with the business cycle between immigrants and natives it is necessary to estimate how such factors act in the immigrants who work in cooperatives and at the same time, what role the special characteristics of cooperatives play in such interaction. Furthermore, if birthplace is significant, basic socio-demographic features must also be introduced in the estimation.

The co-integration methodology will be an appropriate way to carry out the estimation proposed above. Co-integration assumes that there is no short-term relationship among the variables but that

there is a long-term relationship, which means that variables sooner or later return to their natural long-term trend. This methodology avoids spurious estimations. Therefore, we will be able to identify which variables are statistically significant in explaining the long-term relationship between immigrants' employment in cooperatives and the business cycle and the speed at which the system converges to its equilibrium position. Moreover, the impulse response function will allow us to determine how immigrants' employment in cooperatives reacts to output shocks.

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<sup>a</sup> Law 5/2011 of 29 March on Social Economy (BOE, Wednesday, 30 March 2011, No. 76).

<sup>b</sup> See: [http://www.cepes.es/social/econ\\_social\\_whats\\_it](http://www.cepes.es/social/econ_social_whats_it).

<sup>c</sup> The study of Lejarriaga et al. (2013) finds these virtues in the Social Economy, however, their results show that young university entrepreneurs are not aware of the Social Economy reality. In their opinion it is necessary to provide more technical advice and to promote these alternative ways of entrepreneurship.

<sup>d</sup> In Padilla-Meléndez et al. (2014) we found an empirical study focused on the Spanish economy to identify the relationship between individual-level characteristics of entrepreneurs in Social Economy companies and the innovativeness of Social Economy companies themselves.

<sup>e</sup> The study begins in 2003 because it is the first year of available statistics.

<sup>f</sup> The sources of the figures are the Ministry of Employment and Social Security and Spanish National Statistics Institute (INE).

<sup>g</sup> Some investigations do not agree with such countercyclical behaviour. See for instance Staber (1993) who also provides other papers that defend the same point of view. On the other hand, in their paper, Boone and Özcan (2015) develop an analysis as to how strategic choices can help to explain the endurance of cooperatives. An exhaustive bibliographic review about how governance mode and failure rates interact is also available in this study

<sup>h</sup> In this paper an exhaustive review of the determinants of firm creation proposed by the literature can be found.

<sup>i</sup> An alternative approach, known as the “classical business cycle”, focuses on changes in economic activity levels. However, many authors recommend the study of cycles by means of the “growth cycle” and demonstrate its advantages, see e.g. Niemira and Klein (1994) or Diebold and Rudebusch (1999).

<sup>j</sup> Another possibility would be to calculate and compare the growth rates of the original series and of the trend.

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<sup>k</sup> It would have been interesting to distinguish between immigrants from the EU and the rest of Europe, however, our results were distorted because during the period of the study, the EU was enlarged. Also, we have not included Oceania because its data are insignificant.

<sup>1</sup> The high number of figures makes easier to present the linear trend estimated equations, however, all figures are available from the authors upon request.

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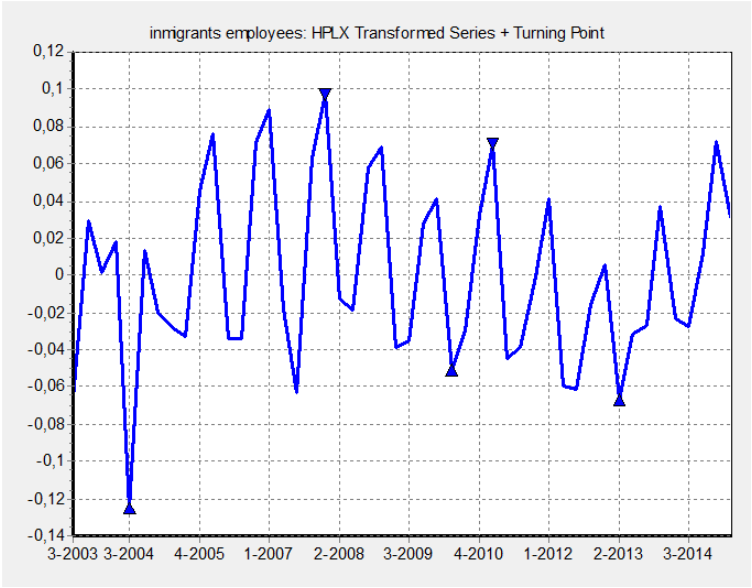
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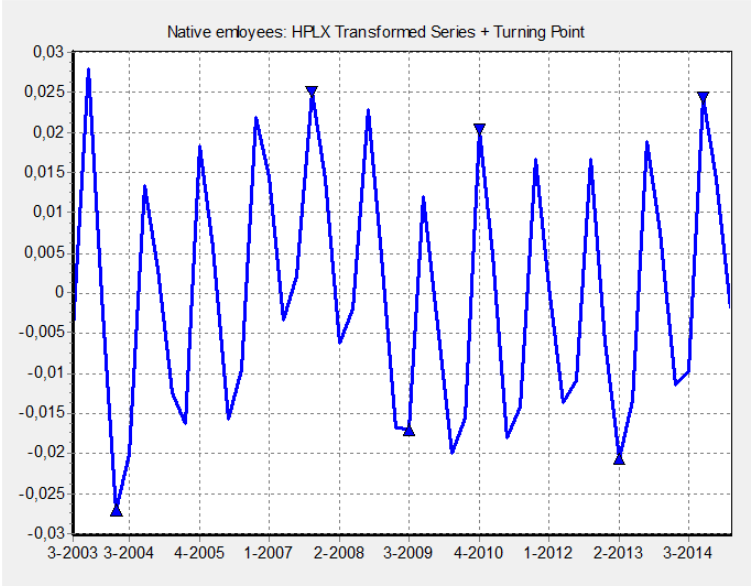
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FIGURE 1  
Peaks and Troughs IE



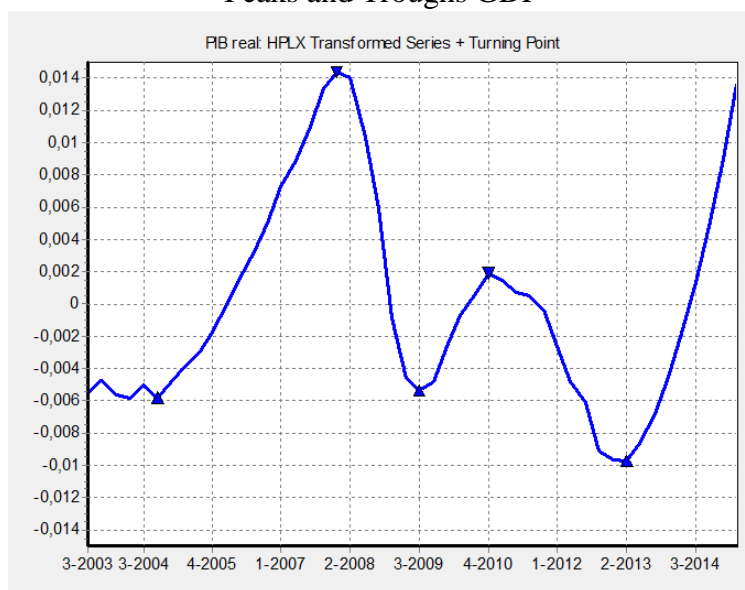
Source: BUSY

FIGURE 2  
Peaks and Troughs NE



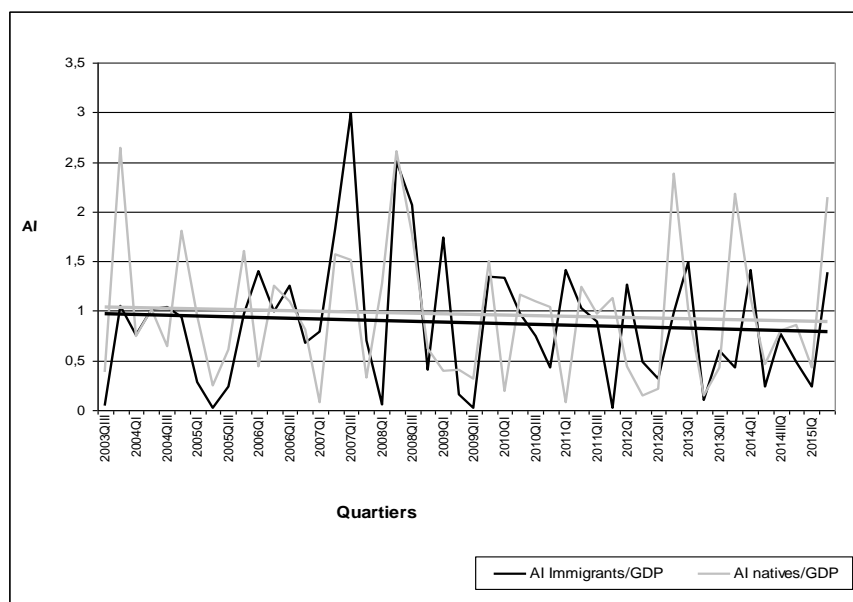
Source: BUSY

FIGURE 3  
Peaks and Troughs GDP



Source: BUSY

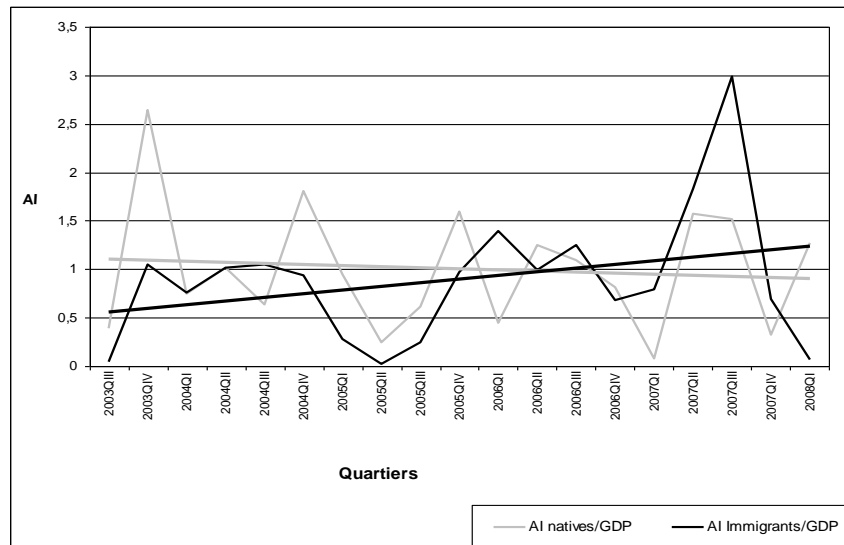
Figure 4: Asymmetry index (AI)



$$Y_{\text{natives}} = -0.003 X + 1.0379$$

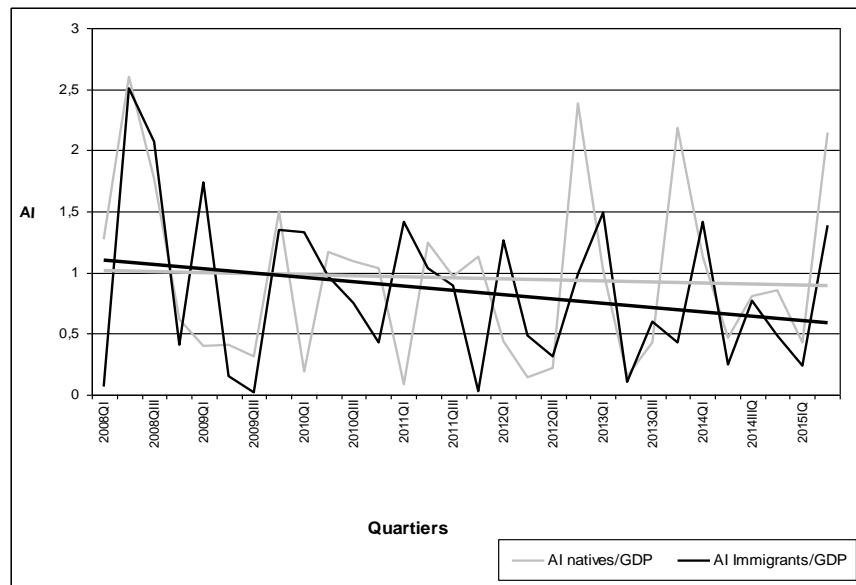
$$Y_{\text{immigrants}} = -0.004 X + 0.9796$$

**Figure 5: Asymmetry index (AI) 2003-3Q/2008-1Q**



$$Y_{\text{natives}} = -0.0111 X + 1.1117 \quad Y_{\text{immigrants}} = 0.0378 X + 0.5193$$

**Figure 6: Asymmetry index (AI) 2008-1Q/2015-2Q**



$$Y_{\text{natives}} = -0.0043 X + 1.0198 \quad Y_{\text{immigrants}} = -0.0176 X + 1.1183$$

**TABLE 1: Turning-points**

GDP		IE		NE	
P	T	P	T	P	T
	2004-4Q		2004-3Q		2004-2Q
2008-1Q	2009-3Q	2008-1Q	2010-2Q	2007-4Q	2009-3Q
2010-4Q	2013-2Q	2011-1Q	2013-2Q	2010-4Q	2013-2Q
				2014-4Q	

Note: P = peak; T= Trough

Source: BUSY

**Table 2: Duration and Amplitude**

	Expansion	
	Average duration (quarters)	Average amplitude (% change) <sup>a</sup>
GDP	9.00	248.00
IE	8.50	238.20
NE	8.33	210.35
	Contraction	
	Average Duration (quarters)	Average Amplitude (% change) <sup>a</sup>
GDP	8.00	-378.00
IE	9.00	-164.49
NE	8.50	-165.70

<sup>a</sup> Average percentage change from trough to peak (expansion) or peak to trough (contraction)

Source: BUSY and own elaboration

**Table 3: Lags and leads (Average)**

Reference series: GDP			
	Peaks	Troughs	All
IE	+0.50	+0.67	+0.60
NE	-0.50	-0.67	-0.60
Reference series: NE			
	Peaks	Troughs	All
IE	+1.00	+1.33	+1.20

**Note :** + (-) denotes a lag (lead) with respect to the reference series

Source: BUSY

**Table 4: Concordance index (I)**

GDP-IE	0.8958
GDP-NE	0.8958
IE-NE	0.8333

Source: Own elaboration

## Appendix: Immigrants' origins: cyclical features

**Table A.1 Turning Points**

<b>Europe</b>		<b>Africa</b>		<b>Central America</b>	
P	T	P	T	P	T
2006-1Q	2010-2Q		2004-3Q		2007-3Q
2011-1Q	2013-2Q	2008-1Q	2009-3Q	2008-4Q	2013-1Q
		2011-1Q	2012-2Q		
<b>North America</b>		<b>South America</b>		<b>Asia</b>	
P	T	P	T	P	T
2006-1Q	2006-4Q		2004-3Q		2004-1Q
2008-3Q	2009-3Q	2006-4Q	2008-3Q	2004-4Q	2009-2Q
2010-3Q	2011-4Q	2010-4Q	2013-3Q	2010-4Q	2013-2Q
2013-1Q	2014-2Q				

Note: P = peak; T= Trough

Source: BUSY

**Table A.2: Duration and amplitude**

	<b>Expansion</b>	
	Average Duration (quarters)	Average Amplitude (%)
<b>Europe</b>	3.00	286.29
<b>Africa</b>	10.00	212.86
<b>Central America</b>	5.00	209.26
<b>North America</b>	5.00	212.11
<b>South America</b>	9.00	181.54
<b>Asia</b>	4.50	220.91
	<b>Contraction</b>	
	Average Duration (quarters)	Average Amplitude (%)
<b>Europe</b>	13.00	-159.54
<b>Africa</b>	5.50	-177.55
<b>Central America</b>	17.00	-189.07
<b>North America</b>	4.50	-217.24
<b>South America</b>	9.00	-178.33
<b>Asia</b>	14.00	-176.59

**Table A.3: Lags and leads (Average)**

Reference series: GDP		
	Peaks	Troughs
Europe	-3.50	+1.50
Africa	+0.50	-1.67
Central America	+3.00	-4.50
North America	0.00	+4.00
South America	-2.50	-1.33
Asia	0.00	-1.33
Reference series: NE		
	Peaks	Troughs
Europe	-3.00	+1.50
Africa	+1.00	-1.00
Central America	+4.00	-4.50
North America	-2.00	+4.67
South America	-2.00	-0.67
Asia	-6.00	-0.67

**Note :** + (-) denotes a lag (lead) with respect to the reference series

**Table A.4: Concordance index (I)**

With respect GDP		With respect NE	
GDP-IE Europe	0.625	NE-IE Europe	0.646
GDP-IE Africa	0.875	NE-IE Africa	0.813
GDP-IE Central America	0.583	NE-IE Central America	0.479
GDP-IE North America	0.583	NE-IE North America	0.562
GDP-IE South America	0.771	NE-IE South America	0.750
GDP-IE Asia	0.646	NE-IE Asia	0.667

**Table A.5: Linear trend estimated equations of the asymmetry index (AI) depending on the origin of the immigrants**

	Whole period	Pre-crisis period	Post-crisis period
Natives	$Y = -0.003X + 1.0379$	$Y = -0.0111X + 1.1117$	$Y = -0.043X + 1.0198$
Europe	$Y = -0.0061X + 1.0172$	$Y = 0.0567X + 0.4073$	$Y = -0.0137X + 0.9884$
Africa	$Y = 0.0014X + 0.9731$	$Y = 0.0361X + 0.5551$	$Y = -0.0166X + 1.2989$
Central America	$Y = -0.0123X + 1.1268$	$Y = 0.0697X + 0.4145$	$Y = -0.0076X + 0.7415$
North America	$Y = -0.0047X + 1.0816$	$Y = 0.0315X + 0.8577$	$Y = 0.0104X + 0.6922$
South America	$Y = -0.009X + 0.9936$	$Y = 0.017X + 0.6958$	$Y = -0.0264X + 1.1411$
Asia	$Y = -0.007X + 1.0862$	$Y = 0.0691X + 0.3864$	$Y = -0.0285X + 1.3279$